6 - DEC 1920
ENTOM

The
Florida Entomologist
(Formerly The Florida Buggist)
Official Organ of the Florida Entomological Society

VOL. IV FALL NUMBER NO. 2
SEPTEMBER, 1920

LUMINOUS BEETLES OF FLORIDA

To the Editor of The Entomologist:

I have been interested in the habits of various groups of Coleoptera for some time, and thought I would write you regarding a subject which might be of interest to the readers of The Entomologist relative to luminous beetles in Florida. The average layman is quite familiar with the fact that certain species of the beetles are luminous and this knowledge is invariaby connected with the group commonly known as "fireflies" or Lampyrids. Whenever a beetle flashes a light at night invariably it is acclaimed a "firefly". In Florida we have two species of luminous Elaterids scientifically known as *Pyrophorus phsoderus* Germ. and *Pyrophorus atlanticus* Hyslop. I have recently collected a large series of *Pyrophorus atlanticus* Hyslop in this section of Florida. The species was observed flying at dusk of day in fields where species of the so-called "fireflies" were also present. The distinction between the luminous Elaterids and Lampyrids is observed in both the location of the luminous organs and their habit of flash. The Elaterids have their light vesicles situated on the pronotum while those of the Lampyrids or "fireflies" are situated on the ventral of the posterior segments of the abdomen. The flash of the Lampyrids is intermittent while at flight while that produced by the Elaterids is quite constant. It was also observed that the males of *Pyrophorus atlanticus* Hyslop were present in greater numbers on the wing while those of the opposite sex were scarce in comparison and were for the most part resting on the foliage displaying a light at times quite constant, apparently waiting the coming of the males. The flashes of the Elaterid were only to be observed but a short while at the dusk of day while the Lampyrids continued their activities into the night.

We recommend the goods advertised in The Florida Entomologist. Please mention Entomologist when you write our advertisers.

I am merely writing about this subject thinking that it will be of interest to the readers of The Entomologist. Two other species of luminous Elaterids occur in the United States, one in Arizona and the other in Texas, while Florida possesses two species.

Very truly yours,

G. F. MOZNETTE.

(Miami, Fla., Aug 1920.)

NEW THYSANOPTERA FROM FLORIDA—VII

J. R. WATSON

(Continued from page 13)

60. Haplothrips gracilis n. sp.

Length about 1.4 mm. Color brown with much orange hypodermal pigmentation; head dark brown; fore tibiae and all tarsi yellowish brown.

Measurements: Head, length 0.24 mm., width 0.12; prothorax, length 0.115, width including coxae, 0.20 mm.; pterothorax, width 0.20 mm.; abdomen width, 0.20 mm.; tube length 0.08 mm., width at base 0.045 mm., at apex 0.027 mm.

Antennae, segment	1	2	3	4	5	6	7	8
Length in microns	24	36	37	35	37	37	33	24
Width in microns	28	24	21	24	24	20	18	11

Total length 0.25 mm.

Head: Length about ⅙ longer than wide, cheeks nearly straight, slightly converging posteriorly, postocular bristles dilated into a small head, rather shorter than the eyes. *Eyes* small, occupying about one-third the length of the head, rounded, not protuding, not produced on the ventral surface. Posterior ocelli opposite the anterior one-third of the eyes. *Antennae* nearly twice as long as the head. Segments all short and thick; 2-6 about equal in length; 1 and base and inner border of 2 concolorous with the head; remainder of 2, and 3 yellowish brown; 4 darker; 5-8 dark brown. *Mouth Cone* rounded at the apex.

Prothorax nearly as long as head and nearly twice as wide as long, a long and short bristle on each posterior angle and a conspicuous one in the middle of each side, all capitate. *Pterothorax* about as wide as prothorax. Wing membrane with a brown area at the extreme base, plainly narrowed in the middle. Fringing hairs sparse but long, no interlocated ones. *Legs* rather short, fore tibiae slightly enlarged, tarsi devoid of teeth.

Abdomen long and slender, 4.5 times as long as broad, prominently banded with dark brown and orange, sparsely provided with bristles some of which are capitate and some pointed. Tube about half as long as the head.

Described from a single ♀ taken from ironweed (Vernonia) at Gainesville Aug. 7, 1919.

The species is remarkably close to *H. bellus* Hood and Williams in most characters but is longer (smaller in most measurements except the abdomen); the eyes are not produced on the ventral side; and the intermediate segments are shorter.

48. Haplothrips graminis Hood.

The author's *Anthothrips floridenis* seems to be identical with this species and as Hood's description was published a few months earlier it takes precedence.

61. Hoplandrothrips quercuspumilae, n. sp.

Female. Total length 1.43 mm. General color dark brown with much red hypodermal pigmentation; all but segments 7 and 8 of the antennae clear brownish yellow; large yellowish brown areas on the inner sides of the distal ends of all femora; tarsi light brown.

Measurements: Head, length 0.24 mm.; breadth 0.21 mm.; prothorax, length 0.115 mm.; breadth 0.32 mm.; pterothorax, breadth 0.38 mm.; abdomen width 0.43 mm.; tube, length 0.145, breadth at base 0.07 mm.; at apex 0.038 mm. Antennae: segment 1, 37; 2, 45; 3, 66; 4, 62; 5, 56; 6, 53; 7, 44; 8, 28 microns. Total length 0.40 mm.

Head rounded in front, only a little longer than broad, cheeks slightly arched and converging posteriorly, provided with small warts which carry short spines. Postocular bristles rather short but stout and conspicuous, dilated into a small colorless head as are all the other prominent bristles except those on the tip of the tube. Eyes rather small, dark red. Antennae 1⅔ as long as the head. Segments 7 and 8 light brown; segment 4 thickest, bearing very few, pale, inconspicuous spines; sense cones rather long but very pale and inconspicuous.

Prothorax very short, less than half as long as the head; sides very rounding and bearing a thick, heavy spine. *Legs* moderately long, nearly concolorous with the body except the tarsi which are lighter. The light areas on the femora are largest and lightest on the hind femora where they occupy half of the length and two-thirds of the width of the femora. They are smaller on the middle femora. Fore femora but slightly enlarged. *Wings* moderately long, membrane colorless, not constricted in the middle, fringed with long hairs which are double for 7-9 hairs on the fore wings.

Abdomen short and thick, provided posteriorly with dark, capitate, conspicuous bristles. Tube rather small, bearing six bristles which are about as long as the tube and equal number of shorter ones.

Described from three females collected from "oak runner" (Quercus *pumuli*) near Gainesville, Fla., Aug. 7 and 8, 1919. Type in the author's collection. Paratype in the National Museum.

This thrips bears a superficial resemblance to H. flavo-antennis (Watson), but it is the apical segments of the antennae which are dark instead of the basal and the intermediate segments are not elongated.

KEY TO NORTH AMERICAN SPECIES OF HOPLANDROTHRIPS.

In the key to N. A. species of Phloeothrips (Florida Buggist, Vol 1, No 4, p. 75) those species in Section 1 now go into the genus Hoplandrothrips, as does also the author's Liothrips flavoantennis. The following additions to the key will serve to distinguish the species now placed in this genus.

aa. Segment 3 of antennae shorter than 1 and 2 together.

1. Antennae mostly brown or only the bases of 3-7 yellow.
   b. bb. and bbb. remain as before.
2. Antennal segments 3-6 light brownish yellow.—*H. quercuspumulae n. sp.*

aaa. Segment 3 about equal to 1 and 2 together, all segments yellow except 1 and base of 2. Antennae 1 two-thirds as long as head.
H. flavoantennis (Watson)

Myrmecothrips gen. nov.

Head subglobose, well rounded in front and much contracted posteriorly, much larger than the prothorax, eyes small. Antennal segments, especially the intermediate ones, all much longer than wide. Mouth cone shorter than its breadth at the base, reaching more than half way across the prothorax. Legs long and slender; fore femora slightly thickened in the females, much enlarged in the males; fore tarsi with a short, blunt tooth in the females. A large long one in the males. Wings wanting. Abdomen short and thick.

Type Myrmecothrips querci n. sp.

This genus agrees with Uzell's description of Cephalothrips in all characters except the long legs. However, in all other described species of Cephalothrips the antennal segments are moniliform and it seems undesirable to stretch Uzell's description to cover a form so diverse in shape of head and antennae. Named from its resemblance to an ant.

62. Myrmecothrips querci n. sp.

Female. General color brown, abdomen black with large white spots on the outer edges of segments 1, 3 and 4. Head dark brown; prothorax a lighter brown, and metathorax lighter still with a yellow area on the posterior part; legs brown. Antennal segments 1 and 2 light yellow, others dark brown.

Measurements: Total body length 2.22 mm.; head, length 0.45 mm.; breadth 0.36 mm.; prothorax, length 0.31 mm., breadth 0.33.; mesothorax, breadth 0.29 mm.; abdomen, breadth 0.52 mm.; tube,length 0.19 mm.,breadth at base 0.09 mm., at apex 0.06 mm. Antennae: Segment 1, 52; 2, 62; 3, 148; 4, 119; 5, 96; 6, 90; 7, 52; 8, 46 microns; total 0.67 mm.

Head subglobose, only a little longer than wide, rounded in front; cheeks arched and strongly converging posteriorly to a neck whose diameter is only .6 that of the greatest diameter of the head, which is directly behind the post-ocular bristles; post-ocular bristles short (.05 mm.); a little longer bristle in front of each eye; both light brown and dilated at the tip into a large colorless head. Eyes small with a few facets.

Antennae 8-segmented; spines few and pale; sense cones short . Mouth cone reaching about .6 distance across prosternum.

Prothorax also subglobose; rounded posteriorly; with a deep constriction near the middle of each side; covering only the basal half of each coxa; each posterior angle and each coxa provided with a capitate bristle. *Legs* long and slender, nearly uniformly dark brown; fore femora considerably enlarged near the base, provided with a few knobbed bristles. Fore tibiae with an especially stout but rather short bristle on the inner side near the end. Fore tarsi with a short tooth; middle and hind tibiae with a row of about 8 stiff, pointed bristles along the inner side, the terminal one and another on the outer side longer than the tarsi.

Abdomen short and thick, abruptly rounded behind the seventh segment. On side of segment 1 there is an elongated, pearly white area, on segment 3 a similar small round one, and on segment 4 a larger round spot. The posterior segments bear modestly long, light brown sharp-pointed bristles. Tube short and thick with a terminal ring of 15 bristles, 8 of which are about as long as the tube.

Male similar to the female, but a little larger. Fore femora greatly enlarged and tarsal spines very long, stout, and curved.

Measurements: Total body length 2.46 mm.; head length 0.48., mm., breadth 0.32 mm.; prothorax, length 0.28 mm., breadth 0.38 mm.; mesothorax, breadth 0.29 mm.; abdomen, width 0.53.; tube, length 0.20 mm., width at base 0.09 mm., at apex 0.05 mm. Antennae: segment 1, 62; 2, 72; 3, 157; 4, 107; 5, 96; 6, 86; 7, 52; 8, 48 microns; total length 0.67 mm.

Described from six females and two males obtained by beating "oak runners" (Quercus pumula) near gainesville, Aug. 2. 11919.

Dolichothrips gen. nov.

Head nearly twice as long as wide and longer than the prothorax, subrectangular in outline, the anterior angles not rounded; sides nearly parallel, somewhat narrowed posteriorly. Mouth cone very short and blunt not reaching the middle of the prothorax. Legs rather short. Wings very short and feeble. Abdomen exceedingly long and slender.

Type Cephalothrips elongata Watson.

The species used as the type of this genus agrees in every particular with Uzell's description of Cephalothrips. But the other species of the genus have a short abdomen and the head is rounded in front. It now seems undesirable to include a form so diverse in shape of head and abdomen in that genus. Hind's figure of Cephalothrips yuccae does not show the head to be rounded in front but all specimens the author has seen show the character well.

The following key will separate the three genera.

Legs short. Head rounded in front. Anntennal segments all short.—*Cephalothrips.*

Legs short. Head square in front. Antennal segments short.—*Dolichothrips.*

Legs long and slender. Head rounded in front. Interdemediate antennal segments elongated.—*Myrmecothrips.*

63. Chirothrips floridenis n. sp.

Female. General color uniformly light brown.

Measurements: Total body length 0.9 mm.; head, length 0.11 mm., breadth 0.11 mm.; prothorax, median dorsal length 0.12 mm., width including coxae 0.23 mm.; pterothorax, width 0.28 mm.; abdomen, width 0.27 mm.

Antennae:

Segment	1	2	3	4	5	6	7	8
Length	27	23	27	23	20	27	10	9 microns
Breadth	43	40	25	27	21	16	8	5 microns

Total length .155 mm.

Head about as long as its greatest width (behind the eyes), sides conspicuously swollen behind the eys and slightly so between the eyes and the bases of the antenae. Vertex depressed in front, the anterior ocellus situated on the margin of the depression and facing forward; no conspicuous bristles. *Eyes* rather large, occupying two-thirds the length of the head,

slightly protuding, sparsely pilose, facets large . *Ocelli* large, posterior pair situated opposite and near the posterior margins of the eyes. *Mouth Cone* short, its length little more than half its width at the base, apex well rounded. *Antennae* but little longer than the head, basal segment rounded and very large, 1.6 times as wide as long, darker than the head. Segment 3 conspicuously pedicellate. Sense cones on segments 3 and 4 colorless but exceedingly thick and heavy; bristles short, pale, and inconspicuous.

Prothorax trapezoidal; sides straight and sharply diverging posteriorly, one moderately heavy spine at each posterior angle.

Pterothorax somewhat wider than the prothorax, sides bulging. *Wings* long and narrow, projecting beyond the tip of the abdomen; fore pair curved, light brown except for a clear area above the base, surface sparsely covered with very minute hairs; the anterior longitudinal vein bears three bristles, one near the middle and the others midway between it and the base and apex respectively; the posterior vein bears six small spines near the base; scale with a pair of heavy bristles near the apex, a smaller one near the base and three along the distal margin. Hind wings light gray. *Legs* short, fore femora enlarged, .7 as wide as long; all femora and tibiae brown, tarsi yellowish brown.

Abdomen short and thick, margins of segments almost black, producing distant transverse bands, bristles on the last two segments rather long.

Described from a single female taken by sweeping Bermuda grass at Seabreeze, Fla., Aug. 24, 1919, and several at Moor Haven June 1920. Type in the author's collection.

Male unknown.

In the shape of the head and thorax and in the presence of but one spine at each posterior angle of the prothorax, this species approaches nearest to C. mexicana; but in its wing characters it agrees with other species of the genus.

KEY TO NORTH AMERICAN SPECIES OF CHIROTHRIPS

1. A single median longitudinal vein in each fore wing.
   C. mexicanus Crawf.
2. Two longitudinal veins in each fore wing; fore wings brown.
   a. Two stout spines at each posterior angle of prothorax.
      b. Antennal segment 6 longer than 4 and 5 together.
         C. insolitus Hood.
      bb. Segment 6 shorter than 4 and 5 together. *C. manicatus* Holiday.
   aa. A single stout spine at each posterior angle. *C floridensis* n. sp.
   aaa. Without stout spines at the posterior angles of prothorax.
      b. Abdomen usually yellow.
         c. Thorax yellowish brown.
            d. Vertex with only two pairs of prominent bristles. Length about .8 mm. Prothorax 1.3 as long as the head.
               C. obesus Hinds.
            dd. Vertex with 9 pairs of prominent bristles. Length about 1.1 mm. Prothorax 2.7 as long as head.
               C. spiniceps Hood.

cc. Thorax yellow ochre shaded with gray.....*C. vestis* Hood.
bb. Abdomen gray or yellowish brown .....*C. crassus* Hinds.

64. Haplothrips cassiae, n. sp.

Color uniformly brown with black hypodermal pigmentation; antennal segment 3 light brown and 4 little lighter than the remainder.

Measurements: Total body length 1.3 mm. (from 1 mm. to 1.5). Head, length 0.22, breadth 0.17 mm.; prothorax, length 0.13 mm., breadth, (including coxae) 0.26 mm.; mesothorax, breadth 0.28 mm.; abdomen, greatest width 0.34 mm.; tube, length 0.12, width at base .075, at apex .03 mm. Antennal segment 1, 30; 2, 53; 3, 59; 4, 61; 5, 48; 6, 44; 7, 41; 8, 27 microns.

Head about 1.3 times as long as wide, cheeks nearly straight but noticeably diverging posteriorly to the base of the mouth cone, roughened with minute warts and bristles. Vertex rounded, finely cross striated; no postocular nor other prominent bristles. *Eyes* rather small, occupying about one-third the length and a little over one-half the width of the head on the dorsal surface, slightly produced posteriorly on the ventral surface; dark reddish brown. *Ocelli* dark red; posterior pair situated opposite the anterior one-third of the eyes. *Mouth cone* very full and rounded at the base, then sharply contracted to a narrow point which however is rounded at the very apex; reaching about three-fourths the distance across the prosternum. *Antennae* about 1.6 times as long as the head; intermediate segments elongated; bearing very few conspicuous bristles; sense cones short but thick, colorless.

Prothorax little more than half as long as the head and twice as wide as long; the posterior angles rounded, bearing each a single heavy bristle with dilated tip.

Metathorax rectangular in outline; the middle of the dorsal surface bearing conspicuous longitudinal striations; destitute of prominent bristles. *Legs* moderately slender; concolorous with the body, even the tarsi being dark brown. Fore femora slightly enlarged, bearing on the lower surface an exceedingly long slender bristle. Fore tarsi with a very small inconspicuous tooth. *Wings* well developed; membrane reaching the base of the tube, clear except for a brown area at the extreme base, markedly constricted in the middle, fringed with long hairs, about 6 (5 to 7) interlocated ones.

Abdomen rather stout and short. Terminal segments bearing dark bristles of medium length. Tube short, wide at base but sharply tapering to the tip; sides straight; terminal bristles rather longer than the tube.

Described from five females collected from blossoms of Cassia at Seabreeze, Fla., Aug. 1919. Type in the author's collection. Paratypes in the National Museum and in the Museum of the University of Florida.

65. Haplothrips Funki, n. sp.

♀. General color light brown; head and thorax darker, tibiae, tarsi, and antennal segment 3 yellow.

Measurements: Total body length 1.87 mm. Head, length 0.187 mm., breadth 0.149 mm.; prothorax, length 0.187, breadth 0.307 mm; pterothorax, greatest width 0.32 mm.; abdomen, greatest width 0.357 mm.; tube length 0.12, width at base 0.067, at apex 0.029 mm. Antennal, total length 0.373 mm.; segment 1, 27; 2, 43; 3, 53; 4, 51; 5, 45; 6, 48; 7, 40; 8, 28 microns.

(Continued on page 27)

The

FLORIDA ENTOMOLOGIST

Official Organ of The Florida Entomological Society, Gainesville, Florida.

PROFESSOR J. R. WATSON.....*Editor*
DR. WILMON NEWELL.....*Associate Editor*
DR. E. W. BERGER.....*Business Manager*

Issued once every three months. Free to all members of the Society.

Subscription price to non-members is $1.00 per year in advance; 25 cents per copy.

MOSQUITOES

THE ENTOMOLOGIST is receiving many complimentary letters on the article by Dr. Hodge in the last number. The awakening interest in this most important matter of reducing the mosquito fauna of our state is indeed encouraging.

In this connection the Jacksonville Times-Union of Sept. 12 has an interesting article on the campaign now being waged to make the city of Perry an example and an object lesson for the other cities of the state.

Last month the editor spent an all too brief vacation in one of our beach resorts. We enjoyed the days hugely; the fish bit well and the surf was fine. But the nights! Well, it was necessary, soon after sunset, to beat an inglorious retreat to the shelter of our rooms and stay there. The half hour before retiring was dedicated to mosquito swatting and it was frequently necessary to repeat the operation between 12 N. and 2 A. M. How much more attractive would be our resorts would they but spend a few thousand dollars in cleaning up the local breeding places of mosquitoes.

At the "city limits" of many of our towns we see a sign "Welcome to Our City". It tickles our vanity to feel that the residents think enough of us to erect those signs. But, unfortunately, in many towns the *culicidae* extend an even more hearty welcome, including a reception committee of "prominent citizens" to meet us the second our car stops.

Now in all this we are not "knocking" Florida but endeavoring to do a little missionary work. If the mosquito were a necessary evil we would be like the "man convinced (by his wife) against his will", who was "of the same opinion still"—(mighty

still). But the problem in most Florida towns is so simple and so cheap compared with the interests involved that we feel that it is the one largest opportunity for real service to the state now before us. The mosquito is the most powerful "knocker" we have. *Culicid delendus est.*

Many of our boards of trade etc. are spending hundreds or even thousands of dollars and much nerve energy in advertising their towns. How would it do to spend at least a part of that money in eradicating mosquitoes and let every delighted tourist and traveling man advertise our town gratis, especially if we are going to inaugurate a movement to open the tourist season on Oct. 1, the very date when mosquitoes are at their maximum abundance?

In the review of Applied Entomology (London, Eng.) Vol. VIII. Ser. B. Part 8, p. 141, occurs an abstract of a paper by E. Roubaud on the feeding habits of *Anopheles* in France The author states that the malaria mosquito much prefers the blood of cattle. horses and mules to that of man and that malaria is on the decrease in those regions where cattle are numerous. He thinks, however, that this is a recently acquired habit of the mosquitoes. Some observations along this line in Florida would be interesting. In any event there is no doubt but that if our farmers would keep their horses and mules in a tightly screened barn at night and install one of Hodge's traps in the windows, they could greatly reduce the numbers of mosquitoes about the premises; particularly if the house also was well screened.

THE TOILET OF THRIPS

There is at least one thing quite humanly feminine about a thrips. Her chief concern is for her hairs. When she has nothing else to do, and frequently when to our masculine minds she has many more important duties, she nevertheless elaborately brushes and smooths her hairs. There are some minor peculiarities of behavior necessitated by her anatomical plan. The more important hairs are on her wings instead of her head and she uses mostly her hind feet for a comb.

Invariably before she can start on a journey or drop in in her neighbor she must comb her hairs. Even in the face of grave danger, as the approach of the collector's needle, she cannot take flight until she has combed her hairs. Combed she must be even tho the delay proves fatal.

The camphor thrips especially spends a goodly part of her time in—combing her hairs. Even while she sucks the life sap of a camphor twig her hind legs are busy—combing her hairs. Having drunk her fill she retires to a shady, secluded nook and, resting on her four fore legs, doubles her hind ones over her back and—combs her hair. Watch her under a glass until your patience is exhausted—she continues to comb her hairs. Go back hours later—she is still combing her hairs. The wingless young show none of this concern for their hairs, but the first act of the adult is to comb her newly acquired wings. Collect one in a bottle and almost before you can insert the cork —she is combing her mussed hairs. If caught in a shower her first act after the rain has ceased is—to comb her hairs. Injure one mortally and with her last mite of strength she—*combs her hairs.*

PERSONALS

Several of our out of town members were in attendance upon the meeting of the County Agents in Gainesville during the week of September 6-11.

The work on the Camphor Thrips carried on by the U. S. Bur. of Ent. is now in charge of Mr. W. W. Yothers.

Mr. M. Marcellus Javens of Mt. Dora is suffering from an injury to his eye.

The county commissioners of Brevard and Polk Counties have recently given Mr. K. E. Bragdon and Wm. Gomme respectively very substantial evidence of their appreciation of their efforts as county agents.

Dr. E. W. Berger has returned from his annual visit in Ohio. Australian lady bird beetles please take notice.

Mr. A. C. Brown, Asst. Quarantine Inspector of the Plant Board at Miami, recently spent a few days at Gainesville.

Mr. W. L. Benedict has accepted a position with the Bureau of Plant Industry and has been assigned to citrus inspection work in California.

Mr. B. L. Boyden recently visited the Plant Board offices at Gainesville for conference regarding the sweet potato weevil eradication work.

Mr. Fritz Fuchs has recently disposed of his grove property in south Dade County and has removed to Miami.

Mr. B. F. Floyd, with the Wilson & Toomer Fertilizer Co., now has headquarters in Orlando with office in the San Juan Hotel.

Mr. J. C. Goodwin has taken a year's leave of absence from his duties as Chief Clerk for the State Plant Board and will pursue advanced studies during the year at the Iowa Agricultural College.

Mr. J. E. Graf has recently been investigating the bean ladybird beetle outbreak for the Bureau of Entomology in the vicinity of Birmingham, Ala.

Messrs. Wilmon Newell, J. H. Montgomery, Frank Stirling and C. E. Whittington attended the "black fly conference" at Orlando on September 9th.

Mr. Jas. Kerr, Asst. Nursery Inspector for the State Plant Board, is now in charge of the northern nursery inspection district, extending from Jacksonville to Pensacola.

Mr. Jas. F. Marsh is now in charge of the citrus grove inspection work in the vicinity of Ft. Myers, having succeeded Mr. Wm. L. Benedict.

Mr. and Mrs. C. A. Reese are the proud parents of a handsome baby daughter. Chas. "did the right thing" by the office force.

Mr. W. W. Yothers was among those attending the citrus growers conference at Orlando on September 9th.

Professor P. H. Rolfs, Director Florida Experiment Station, has recently visited Washington, D. C., on official business.

Dr. J. H. Montgomery represented the Plant Board at a Conference at Birmingham, Ala., of the Southern States Entomologists on September 20. This conference was called on account of the recent appearance of the Western Bean Ladybeetle (*Epilancha corrupta* Muls) in Alabama.

Mr. C. M. Hunt has built a house at Lake Wales. Mr. Hunt is now manager of a grove property at this place, having severed his connections with the Plant Board.

NEW THYSANOPTERA FROM FLORIDA—VII

(Continued from page 23)

Head longer than broad, cheeks slightly arched, roughened, slightly converging posteriorly. Post-ocular bristles thick but light colored, with a large transparent head. *Eyes* rather small, occupying about a third of the length of the head and a little more than half the breadth, deep red by reflected light. *Ocelli* large, concolorous with the eyes, situated far forward; pos-

terior pair opposite the anterior third of the eyes and touching their margins. *Mouth cone* short and very bluntly rounded, scarcely reaching the middle of the prosternum, slightly swollen at the base. *Antennae* twice as long as the head. Segments 1 and 5-8 dark, concolorous with the head; 2 and 4 lighter brown; 3 yellow, clear at the apex. No sense cones on the inner surface of segment 3, those on 4, 5 and 6 thick but colorless. Bristles light colored and short.

Prothorax about as long as the head, sides conspicuously bulging across the coxae where they bear each a heavy, knobbed, but light-colored bristle; posterior angles much contracted, each bearing a similar bristle.

Pterothorax subrectangular, sides straight and nearly parallel. *Legs* rather long and slender. Femora dark brown, concolorous with the body. All tarsi and tibiae light brownish yellow, the latter shaded with brown on the outer surface. Fore femora considerably enlarged. Fore tarsi with a strong curved tooth and a smaller straight one. *Wings* well developed but not reaching the tip of the abdomen. Membrane clear in distal half but the proximal half of fore wing clouded with brownish gray. Fore wing much contracted in the middle, destitute of prominent veins or bristles; fringing hairs numerous and fairly long, 4 or 5 interlocated ones.

Abdomen rather long, sub-cylindrical, conspicuous bristles on only the last two segments but a few of these are quite long, light brown.

Described from two specimens; one obtained from sweeping vegetation including scrub oak at Daytona Beach Aug. 1919, and another from beating Basswood foliage Tilia americana at Gainesville, May 1920.

Male similar to the female but the fore femora more enlarged and the tarsal spine larger.

Described from a single specimen collected from underneath the bark of an oak tree (Quercus falcata) at Orlando Oct. 1919. Stated by Mr. Funk of the U. S. Drug Garden who called our attention to this insect, to have been abundant on the oaks in the spring.

66. Haplothrips querci, n. sp.

♀ General color grayish brown with a little red and purple hypodermal pigment. Fore femora and tarsi lighter.

Measurements: Total body length 1.17 mm.; head, length 0.19 mm.; width 0.17 mm.; prothorax, length 0.20, width including coxae 0.288; mesothorax, width 0.37 mm.; abdomen, width 0.24. mm. Antennae, segment, 1, 32; 2, 42; 3, 40; 4, 48; 5, 43; 6, 37; 7, 37; 8, 27 microns.

Head 1.1 times longer than broad, sides slightly bulging, parallel or slightly converging posteriorly, sparsely pilose, post-ocular bristle short and pointed, not reaching the middle of the eye. *Eyes* moderately large, occupying .4 the length and .7 the width of the head. Ocelli large, posterior pair set in front of the middle of the eyes and touching their margins. *Mouth cone* evenly and bluntly rounded, reaching a little past the middle of the prosternum. *Antennae* 1.5 times as long as the head; almost uniformly grayish brown, segment 2 a little darker and segment 3 a little lighter than the others; sense cones and bristles pale and inconspicuous.

Prothorax shorter than the head, nearly 1.5 times as wide as long, trapezoidal in outline; posterior angles well rounded and each bearing a pair of heavy but rather short, colorless bristles which are blunt at the end.

Pterothorax sub-rectangular in outline, sides converging slightly posteriorly. *Legs* moderately long; except the tarsi and fore tibiae which are lighter brown, concolourous with the body. Fore femora slightly enlarged. Fore tarsi with a small spine.

Wings well developed. Membrane clear except for a small area at the base and the scale of the fore wing which are clouded with brown. Fore wing noticeably contracted in the middle; fringing hairs long, 6 or 7 interlocated ones.

Abdomen quite short. The sides of each segment about parallel but abruptly contracted at the point of contact with the next. Bristles rather short, tube small, terminal bristles short.

Male similar but fore femora much enlarged and fore tarsal spine robust. Sides of the head converging posteriorly. Eyes larger.

Described from a single female and two males beaten from scrub oak at Daytona Beach, Fla., Aug. 1919. Type in the author's collection. Very close to H. Graminis but the color is less yellowish brown and the intermediate antennal segments are more elongated, especially the third. There is a sense cone on the inner surface of the segment 3 but it is thin and inconspicuous. The most noticeable difference is in the shape of the abdomen which is much shorter than in *H. graminis.*

67. Heliothrips fasciatus.

A single specimen of this species, which is very abundant in California where it is called the "Bean Thrips" because of its ravages on cultivated beans, was collected from Cassia at Seabreeze, Fla., Aug. 1919. This was far from any cultivated land and there can be no doubt that it is a native insect. This is the second report of its presence in the East, Mr. Morgan having collected it in Tenn.

68. Heterothrips tiliae, n. sp.

♀. General body color dark brown, intermediate antennal segments, tarsi, tips of all tibiae and entire fore tibiae brownish yellow.

Measurements: Total body length 0.75 mm. Head, length 0.07 mm.; breadth 0.13 mm.; prothorax, length 0.08, width 0.19 mm.; mesthorax, width 0.23 mm; abdomen greatest width 0.24 mm.; antennae, total length 0.19. Segment 1 (exposed portion) 9.5; 2, 28; 3, 48; 4, 38; 5, 29; 6, 26; 7, 11; 8, 12; 9, 10 microns.

Head about twice as wide as long, broadest behind the eyes; entire *dorsal surface conspicuously transversely striate;* cheeks bearing several short but stout hairs; frons deeply emarginate at the base of each antenna. *Eyes* black, prominent, projecting; *hairs between the facets* conspicuous, fully as large as those on the cheeks. *Ocelli* large, yellow, prominent. Posterior pair contiguous with the posterior inner angles of the eyes; flattened on the side next to the eye. Anterior facing forward. *Mouth cone* reaching nearly *across the prosternum. Antennae* almost three times as long as the exposed portion of the head; 9-segmented; segment 1 cup shaped, 2 and 6 barrel shaped, 3 urn shaped, 4, oblong, 5 ovoid, 8and 9 conical; 1, 2 and 6 to 9 dark brown, 3 to 5 brownish yellow; 3 nearly colorless at the base, 4 shaded with brown on apical half; 3 with two deep constrictions near the base and many shallow ones above. Bristles and sense cones short and very inconspicuous, nearly colorless except those on segment 2 which are larger and brown; segments closely united, articulations brown.

Prothorax considerably longer than the head, twice as wide as long, sides arched and strongly diverging posteriorly; dorsal surface transversely striated; two or three short, curved spines at each anterior angle; and a heavy, dark but short one at each posterior angle directed backward. *Legs* brown except the tarsi, *distal ends of the hind and mid tibiae and the entire fore tibiae* which are brownish yellow; surface marked with diagonal striations.

Mesothorax wider than either the prothorax or the metathorax; anterior portion of dorsal surface transversely striated, middle longitudinally striated. *Wings* considerably longer than the abdomen, membrane brown, covered with minute hairs, abruptly widened at the base, costal margin sparsely fringed with long hairs and bearing about 28 stout bristles, fore vein bearing about 14 and hind vein about 19.

Abdomen oval in outline, last segment markedly narrow and elongated, tubular. Bristles very short, those of the last two segments longer but still unusually short.

Male. Considerably smaller. Body length 0.50 mm. Head 0.047 mm. long and 0.14 mm. wide; prothorax, length 0.095 mm., breadth 0.18 mm.; mesothorax, greatest width 0.2 mm.; abdomen 0.14 mm. Antennae, segment 1, 10; 2, 28; 3, 50; 4, 36; 5, 30; 6, 27; 7, 12; 8, 14; 9. 11 microns.

Striations on the head and prothorax are less marked. Abdomen very small, scarcely twice as long as wide. Wings much exceeding the abdomen.

Described from a singe female and a single male collected from Basswood (*Tilia americanna*) at Gainesville, Fla., May.

This species is very close to *Heterothrips vitis* Hood but is smaller, lacks any suggestion of orange on the third antennal segment which is much shorter as is also the prothorax, and the forth antennal segment is also yellow. Type in the author's collection.

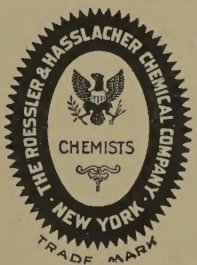
Printing for All Purposes

Carefully Executed
Delivered on Time

Pepper Printing Company

Gainesville, Florida

WANTED—To buy or exchange for northern species, southern Chrysopidae (Lace-winged-flies). All stages desired, especially material for biological studies. Will determine specimens. Dr. Roger C. Smith, U. S. Ent. Lab., Charlottesville, Va.



"CYANEGG"

SODIUM CYANIDE 96-98 %—Cyanogen 51-52%—In EGG SHAPE. Each egg weighs approximately one ounce.

The most effective **FUMIGATING MATERIAL** to destroy Scale Insects on **CITRUS TREES,** Nursery Stock and plants of all kinds. In **CALIFORNIA** the majority of orange growers have been using **"CYANEGG"** for Fumigation for many years with excellent results.

"CYANOGRAN"

SODIUM CYANIDE 96-98%—Cyanogen 51-52%.
In GRANULAR FORM.

An ideal material for **SOIL STERILIZATION** against

ROOT KNOT

Manufactured in U. S. A. by the

ROESSLER & HASSLACHER CHEMICAL CO.

100 William Street **NEW YORK, N. Y.**

Factory: PERTH AMBOY, N. J.

Now is the time to spray trees affected with rust mite, scab or melanose. We handle the

DRY LIME SULPHUR

It saves freight on water and expense of handling. Shipped in air-tight packages with removable top. Will keep indefinitely if top is replaced after using. Dissolves readily in any water. Add Dry Lime Sulphur to water and stir. Five pounds to one hundred gallons water for rust mite, equivalent to two gallons 33° Lime Sulphur Solution to one hundred gallons of water. Prices range from 10½ to 25c per pound according to quantity order.

Arsenate of Lead
Bluestone
Bordeaux Mixture
Genuine Protexol
Caustic Soda
Schnarr's Spray Formula
Carbolic Acid, Crude
Copperas
Fish Oil Soap
Soluble Sulphur Compound
Sulphur Flowers, etc.
Target Brand White Fly Destroyer.

Fresh stock of goods always on hand.

IN OUR SPRAYING DEPARTMENT

we carry only the best and most reliable, such as Leggett's Champion Duster, Lowell Compressed Air Sprayers and Gould Sprayers. Write for booklet and prices.

E. O. PAINTER FERTILIZER CO., Jacksonville, Fla.

"TESTED SEEDS FOR FLORIDA"

SEEDS FOR

FARM AND GARDEN

INSECTICIDES,
FUNGICIDES,
DISINFECTANTS

Send for our Catalog.

MANN-HODGE SEED CO.

PALATKA, FLA.